

## **The Need for Inhalation Reference Concentration Values for Acute and Other “Less-Than-Lifetime” Exposure Durations**

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EPA has historically developed reference concentration (RfC) values for non-cancer health effects based solely on a chronic exposure scenario (e.g., continuous exposure: 24 hours/day, 7 days/week for a 70-year lifespan). Emissions of toxic air pollutants, however, do not always result in such a consistent exposure pattern. The need has intensified during the last few decades within the risk assessment community to address health effects from higher levels of exposure to toxic air pollutants that would occur for shorter durations of exposure. This need has increased with the realization by many regulators within the EPA of the relevancy of acute (single exposure, less than or equal to 24 hours) and other less-than-lifetime exposure scenarios to the Agency’s mission (i.e., to protect human health and the environment). A variety of occupational guidelines for acute exposures currently exist; however, the intent of these values (e.g., National Institute of Occupational Safety and Health permissible exposure levels [PELs], and the American Council of Governmental Industrial Hygienists’ threshold limit values [TLVs]) addresses responses that may be specific to a worker population, include considerations in addition to health effects (e.g., monitoring feasibility), and may not necessarily be regarded as safe for the general population. The emergency response guidelines for acute exposures (e.g., Acute Exposure Guideline Levels [AEGLs] and Emergency Response Planning Guidelines [ERPGs]) are designed for very specific scenarios (“once-in-a-lifetime” types of events) with an assumption of only one exposure event. They are not applicable when short-term, “higher-than-average” exposures occur on a more routine basis nor do they consider exposure to residual levels of contaminants in the periods following a catastrophic release. These considerations are important, however, when making decisions regarding exposures following an event such as the aftermath of Hurricane Katrina or for clean-up and re-occupancy following an event involving Homeland Security. The combination of demand for and lack of appropriate short-term reference values for these scenarios have made this need critical. Acute RfCs are being developed by the National Center for Environmental Assessment (NCEA) as a first step in addressing a number of these concerns and to provide some of the values needed to accomplish the Agency’s mission. Presented here are descriptions of the various scenarios within the Agency to which acute RfCs would be available, as well as a comparison and contrast of the acute RfCs with other available acute guidelines. A current timeline and status of methods development for acute RfCs is also provided.

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